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ward of the Rocky Mountains, although small single glaciers have and still do exist between spurs of the mountains which approach the coast. No boulders, such as are common in New England, no scratches or other marks of ice action have been observed by any of our party, though carefully looked for."

IX. — *On the Peninsula of Sinai.* By the Rev. F. W.
HOLLAND, M.A., F.R.G.S.

Read, May 11, 1868.

Two years ago I had the honour of communicating to the Royal Geographical Society a paper containing an account of a few months' wanderings in the Peninsula of Sinai. The experience gained during a former visit, in 1861, had enabled me to adopt a more independent mode of travelling than is usually followed in that country; and dispensing with the services of a dragoman, I traversed on foot a considerable portion of the peninsula, and visited many spots that had probably never been trodden by European feet since the time of its monastic occupation.

I returned to England, however, impressed with the need of further exploration in so interesting a country. The best maps I had found in many parts extremely incorrect; large districts still remained unvisited, and I felt convinced that a more careful examination of the natural features of the country could not fail to throw additional light upon some of the difficulties connected with the history of the Exodus, and might also lead to the discovery of some interesting relics of antiquity. When, therefore, in September last an opportunity was afforded me of revisiting for a third time the Peninsula of Sinai, I readily availed myself of it; and although I felt strongly my own inability to do justice to the work of exploration, since nobody else had at that time appeared in the field, I determined to go and do the best I could, hoping that at all events I might be of some service as a pioneer. I arrived at Suez on the 8th of October; and as the Directors of "the Peninsula and Oriental Company" had kindly granted me permission to obtain provisions there from their stores, and I had determined again to render myself as independent as possible by travelling on foot, taking with me this time neither companions nor servants, my arrangements were soon completed; and on the 10th of October I started for the desert, with four camels laden with provisions for four months, a small tent, and other necessaries for the journey. My plan was to make the monastery or convent, as it is generally called, which stands at the foot of Mount Sinai

(Jebel Mûsa), my first point, to establish there my *depôt* of provisions, and to make it my head-quarters, while I was examining the surrounding country.

I took, however, a somewhat longer route thither than that *usually* taken, in order that I might follow out what I *then* supposed to be the most probable route of the Israelites. Crossing the head of the Gulf of Suez, and passing by "the Wells of Moses," I kept along the coast until I reached, on the 3rd day, the mouth of Wady Ghurundel. This coast-road is a far more interesting road than the one generally followed by travellers, which lies some 6 or 7 miles inland, along a hard stony plain. For this plain (which is about 15 miles broad, and is bounded on the east by the long range of Jebel Er-Rahar) slopes gently down towards the coast, and its drainage being intercepted by hillocks of sand blown from the shore, has formed a long tract of alluvial deposit, which bears a considerable amount of vegetation.

About 30 miles south of Ayoun Mûsa lies the Well of Abou Szoueyra, a mere water-hole, about 8 feet deep, dug in the bed of a dry watercourse. The water is slightly brackish, like that of Ayoun Mûsa, but quite drinkable. South of this point the plain rapidly contracts, irregular spurs of limestone being thrust down to within half a mile of the shore, but on nearing the mouth of W. Ghuründel the mountains again recede, and a plain is formed which stretches down to Jebel Hummâm Faroun, *the mountain of the baths of Pharaoh*. This mountain cuts off further progress along the coast; it derives its name from a number of hot sulphurous springs, which issue from the sand at its base, just below high-water mark. The temperature of the water I found to be 160°. The baths are frequented by the Arabs for medicinal purposes; and a course of forty days' bathing, the sacrifice of a sheep, and a special diet of flour mixed with oil, and certain medicinal herbs, is regarded by many of them as an almost certain cure for rheumatism and ague. The heat of the springs, and the sulphurous smell which they emit, the Arabs suppose to be caused by the troubled spirit of Pharaoh, whose body they say lies buried beneath in the sand; for here is the traditional spot of the drowning of the Egyptian host and the passage of the Israelites through the Red Sea. After visiting J. Hummâm, I retraced my steps to W. Ghuründel. The lower portion of this wady is one of the most fertile in the whole of the peninsula. It is nearly 300 yards broad in many places, and thickets of tamarisks, palms, and beds of bulrushes and reeds abound, and wild ducks, with many kinds of smaller birds, frequent the pools, formed here and there by a clear stream of running water, which never fails. A

few tents of the Terabein Arabs are generally pitched here, the whole of the rest of the country south of the Tyh Range is occupied by the Tówarah. After keeping up W. Ghurúndel for a few miles, I again struck southwards across the irregular limestone plateau which forms the head of W. Usseit and W. Thâl, and passing round the back of the Hummâm Range, I descended again to the sea by W. Taiyibeh, and kept along the coast down the plain of El Mûrkha (now generally accepted as "the Wilderness of Sin"), until I reached the mouth of W. Feiran.

Although in the contract which I had made with my Arabs it was distinctly stated that this should be our route, I had some difficulty in inducing them to follow it, owing to the scarcity of water. They usually take the road up W. Shellûh, and when we reached the point where that road branches off, they came to a standstill, and refused to proceed. Finding argument useless, I adopted the plan of going on alone, knowing that they dared not leave me to die, since my sheikh had made himself responsible for my life; and when they saw me disappearing in the distance, they all, as I had expected, followed me. On reaching the bottom of W. Feiran, the stock of water which we had brought from Ghurúndel was exhausted, and when night came on we found that we were still 20 miles from the nearest well. The heat of the sun during the day at that time of the year (October 16th) was very great. At 8 A.M. that morning my thermometer stood at 84° in the shade, at 12 at 93° in the shade, and in the sun about 135°. Had we waited for daylight we should have suffered terribly from the heat without water, so we lay down to rest for a few hours until the moon rose, and then we pushed on to the wells of El Hessne, which we reached at dawn.

Being anxious to deposit my stores at the convent as soon as possible, I kept straight up Wady Feiran and Wady Es-Sheikh, which form the main road to Jebel Mûsa, only diverging slightly on *one* occasion to visit the tents belonging to my Arabs. These formed a fair specimen of an Arab encampment in Sinai. There were ten tents pitched in a straight line, so that the occupants of one could not see inside their neighbour's tent. The scantiness of the pasturage does not allow of the Tówarah Arabs pitching many tents in one spot; the largest encampment I saw only consisted of fourteen tents; but there is no occasion for them to congregate in large numbers, since their territory being bounded by the sea on the east and west, and by the Tyh Range on the north, they are never in fear of incursions by other tribes, and they are themselves a very peaceable and quiet people. The material for the tents, consisting of a coarse, dark

goat's-hair cloth, sometimes relieved by a white stripe of cotton, which they obtain from Cairo, is woven by themselves; sometimes by the men, but more often by the women. One long piece forms the back and sides of the tent, another the top, and the two are fastened together with wooden pins. The tent is supported by forked poles, which are secured by ropes, which the men make very cleverly and quickly from palm-leaf fibre, and it is divided into two compartments by a hanging in the centre. The left-hand compartment is occupied by the women and children, and contains their scanty store of corn and dates, water-skins, a small hand-mill, and in the lambing season a small stone enclosure, in which the kids are kept. The men, when at home, live a lazy, idle life, congregating together in each other's tents, or under some neighbouring rock, and passing the day in drinking coffee and telling stories. The women have all the hard work to do. The corn has to be ground daily for the evening and morning meal. They take entire charge of the goats, of which there are on an average from ten to twenty, sometimes thirty to each tent. They collect the firewood, fetch the water, and gather herbs from the mountains for the kids. The water has often to be brought from a distance of 3 or 4 miles; and donkeys, which thrive wonderfully in the desert, are generally employed to carry the water-skins. The goats from all the tents are collected together every morning, and driven off to the huts under the charge of two or three girls; it is a pretty sight in the evening to see them drive home, and finding their way to their own tents, where they are tied up for the night to a cord outside. When the store of corn runs short the men burn a little charcoal, using generally for this purpose the wood of the broom or "retem," and loading their camels with it, start for Suez or Cairo, where they exchange it for corn. The only other articles of commerce which the Peninsula of Sinai affords appear to be mill-stones, rushes for making mats, manna, gum Arabic, butter and dates, and a few sheep and goats, but articles of food are too precious to the Arabs themselves to be often exported. The manna and gum Arabic appear to be found in very small quantities. The latter exudes from the boughs of the Mimosa, or shittim-tree, after the young shoots have been lopped off in spring to feed the goats.

Both men and women are wretchedly clothed, and the children often have literally no clothing at all, or only a goatskin hung over their shoulders, and turned whichever way the wind blows. The women all have their faces veiled, and wear their hair twisted or plaited into a knot over their forehead. On the top of this knot is often placed a red bead. Many of the girls wear a curious head-dress, made generally of a strip of red cloth,

with pieces of mother-of-pearl, about 5 inches long and 1 inch broad, sewed upon it. Their chins are tattooed, their eyes are dark and bright, and their hair black. Upon the women's veils are sewed coins, buttons, and any bright bits of metal they can pick up; they wear a mass of glass beads round their necks, and numerous bracelets, the favourite pattern being a plaited leather ring studded with silver nails. The men all have their heads shaved, and they wear sandals, sometimes made of camel's hide, sometimes of the thick skin of a fish, which they obtain from Tor, or the Gulf of Akaba.

But to return to myself—I arrived at the convent on the 19th of October; and dismissing my Arabs, took up my quarters with the 26 Greek monks who live there. I was unable to speak modern Greek, and their pronunciation of Arabic was so peculiar that it was some days before I could understand a word that they said to me. I succeeded, however, in making *them* understand that I had come to live for a time with them, and I was received most hospitably.

I at once set to work to explore the surrounding mountains and wadies, and to fix the names of the various localities. My life at this time was a somewhat curious one. I occupied a little room at the top of the convent. At sunrise, about six o'clock, I was awoke every morning by the clanging of the pieces of iron and wooden boards used as bells to call the monks to service. Going to the pilgrims' kitchen, where the monks always had wood and water placed for me, I lighted a fire, and while my kettle was boiling, returned to dress, and clean out my room. After breakfast I prepared for my day's excursion, and as I went out I often met one of the monks, who asked me where I was going, and told me that I must take a guide with me from the convent. This I always flatly refused to do, for I found that the monks and their Arab servants seldom stirred beyond their garden, and knew little or nothing of the country. The doorkeeper unlocked the three massive iron doors for me, and then making my way through the garden, I let myself down from a little gate in the wall by a rope. If intending to ascend an unknown mountain I generally picked up an Arab on my way, an ibex hunter if possible, since they know the mountains best; but I did not take the same one on different days, in order that I might check the mistakes or misrepresentations made by one by the information obtained from another. At sunset I made my way back to the convent, again lighted my fire, and cooked my dinner. In the evening occasionally I had a visit from some of the monks. A few of them are intelligent men, but most of them are wretched specimens of humanity,

dirty, lazy, and uneducated. They are strict vegetarians, and consequently their cats patronized me to a great extent, and I several times lost some of my specimens of natural history.

By the 7th of November I had explored most of the surrounding country within a day's walk of the convent. I then began to make more distant excursions, taking with me an Arab to carry my blanket and bag of provisions, and sleeping out sometimes for three or four nights. I very seldom carried water with me, for even in November, the *end* of the long dry season, I generally found in the neighbourhood of Jebel Mûsa two or three springs on every important mountain. Water is not nearly so scarce in the granitic district as most travellers have supposed. There is also a far larger amount of vegetation than usually described. The basins on the summits of the mountains generally afford good pasturage, and even the mountain sides, which look so barren from the wadies below, are often covered with numerous plants, on which the goats delight to feed. Many of the smaller wadies, too, are astonishingly fertile, and in former days, when fairly cultivated by the monks, must have yielded abundance of fruit, vegetables, and even corn, for I found traces in several spots of terraced plots evidently laid out for growing corn. I can readily believe that at one time 6000 or 7000 monks and hermits lived, as we are told, in those mountains, and were enabled in great measure, perhaps altogether, to support themselves by the cultivation of the soil.

The gardens and olive groves of W. Leja are well known. Those in the basin of Jebel Fureia, in Wady Tinia and Wady Zouartîn, on the west of Jebel Tinia, in Wady Ilâk on the east, and in many other wadies in the mountains between Tor and Jebel Mûsa, are not so well known, and are far more productive. In W. Ilâk alone, in addition to a fine grove of olives near the ruins of an old monastery, there is for *three miles* a constant succession of gardens, each garden having in it two good wells, which never fail, and producing olives, pears, apples, vines, figs, palms, nebk, carroub, apricot, mulberry, pomegranate, and poplar trees; while above and below these gardens runs a stream of water which affords here and there a pool large and deep enough to swim in.

The object of the first of my longer excursions from the convent was the ascent of J. Um Shaumer, for I was anxious to obtain bearings from its summit, and also to measure its height more accurately than I had been able to do in 1865. I again found little difficulty in the ascent, the last few hundred yards alone being very precipitous, and with bare feet I easily surmounted that. With hypsometer and two aneroids I quite

settled the disputed point as to which was the highest, J. Um Shaumer or J. Katharine, and confirmed my former opinion that the latter is the highest by 30 feet.

The Arabs have a curious tradition connected with this mountain, viz., that an ibex hunter, having made his way to the summit, saw there a most beautiful Arab girl. Startled at the apparition he hastened down; but next day, having come to the conclusion that it would have been wiser to have claimed the girl as his bride, he returned in search of her, but found the path rendered impassable by a huge stone which had been placed across it; and ever since that time frequent reports of guns have been heard to issue from its summit. These reports are said to be heard even as far as the convent; and the mountain is a great object of superstition and mystery amongst the Arabs. I trace the origin of this tradition to a very remarkable rock on the north of the mountain, near its summit, which bears the exact likeness to a woman's face, and I found that this rock, and not one lower down, as usually supposed, bears the name of "Hadjar el Bint," "the Maiden's Rock." I myself have on several occasions heard the reports said to issue from the mountain, and have not the slightest doubt that they are caused merely by the falling of rocks.

On my return from J. Um Shaumer I visited a mountain called Jebel Hadēd, "the Iron Mountain." Veins of specular iron ore crop out near its base in several spots, but I could find no traces of their having been worked. The fallen *débris* however from the mountain above was so great that workings may exist hidden beneath it.

In the neighbourhood of this mountain my attention was first drawn to some remarkable ruins of buildings and tombs, which I afterwards found occurred in large numbers throughout the whole of the southern portion of the peninsula, and which I have come to the conclusion are probably Amalekite ruins.

Along the banks of a dry watercourse near J. Hadēd I discovered the ruins of nearly 40 of these buildings within the space of less than a mile; some few of them stood in groups, others stood alone at a short distance from each other. I afterwards returned and examined them more carefully, and opened several of them. There were two kinds of ruins, apparently of the same date. The first, which were probably used as store-houses, were built in the shape of a dome, about 5 feet high and 5 or 6 feet in diameter in the interior; the walls were often as much as 4 feet thick, and a large flat stone formed the highest portion of the roof, which appeared to have been covered with loose shingle. They had no windows, and one door, generally placed on the south or west, about 3 feet high and $1\frac{1}{2}$ broad.

The stones used in the building were often of great size, but they were never dressed, and of course the size depended much on the character of the surrounding rocks. No mortar was used in their construction. I found in one a few small bones, a sheep's tooth, and a bit of crystal; but I searched in vain for further traces of their builders. The Arabs call these buildings "namous," "mosquitoes," and say that they were built by European gentlemen many years ago (*i.e.* by the monks of old) as sleeping places, in consequence of the number of mosquitoes; and on my remarking that there were now very few mosquitoes, they at once replied that there was formerly *more rain*, and consequently more mosquitoes. This tradition is evidently absurd, but at the same time interesting as embodying the belief that the rainfall was formerly larger than at present.

The other kind of ruins, which are generally found in close proximity to the former, often in separate groups, consist of massively built circles of stones of about 14 to 15 feet in diameter, and about 3 feet high, but without any roof. These were evidently tombs, for I found human bones in all that I opened; and in one I found two skeletons lying side by side, one of them on a bed of flat stones. The rings of stones were apparently half filled with earth, the bodies were then laid in them, and they were filled up with earth; and heavy stones were then placed at the top to prevent the wild beasts disturbing the bodies; such probably was the mode of burial. Some, however, of these rings of stones were of far larger size. I found some of 15 to 30 yards diameter, some of which contained a smaller ring in their centre; and near the mouth of Nukb Hawy I discovered one no less than 125 yards in diameter.

The shape of these buildings and tombs at once distinguishes them from the ruins of monastic times, which are very numerous; the latter, as a rule, are always *square built*; these always *round*. The character of the two buildings also differs much. The *round* houses and tombs are far more massively and rudely built than the *monastic* ruins. In the latter mortar was generally used; in the former never. The most remarkable groups of these ruins which I discovered, were situated in W. Hadééd, W. Nusb, near Dahab on the coast of the gulf of Akaba, on a plateau south of J. Théllal, and in a little wady between the head of W. Hebrân and W. Solaf; at which latter spot I found upwards of 100 ruined houses and tombs. They extend, however, as I have said, over a large portion of the Peninsula.

Their extent and massive workmanship proves, I think, that they must have been built by a large and powerful people. They are evidently of earlier date than the monastic occupation of Sinai; earlier than the time of the writers of the Sinaitic

inscriptions, for I found upon and within them a few of those mysterious inscriptions, evidently made after they had fallen into ruins, and lay in exactly the same condition as at present.

The *only* large and powerful nation of whose existence we have any record in Sinai is that of the *Amalekites*; and these ruins in the character of their workmanship, their position, and extent, agree well with what we should expect to find of the buildings of such a people. Such then, I believe them to be, and if I am right in doing so, they go far to prove this interesting fact, that the Amalekites were to some extent an *agricultural* as well as *pastoral* people, for in two or three spots I found evident traces of gardens in connexion with these ruins.

On November 12th I started on an excursion to J. Eth Thebt, a mountain situate about 30 miles south of Jebel Mûsa, which had never before, I believe, been visited by Europeans, and which was reported by the Arabs to be the highest mountain in the Peninsula. I took with me two Arabs and a camel, as I expected to be absent for some days. I had as yet had no rain or snow, but every week it was becoming colder, and the Arabs were beginning gradually to work their way down into the lower wadies. In the depth of winter the higher ground round Jebel Mûsa is almost entirely deserted by them, for they cannot stand the cold. On the night of November 13th, near the head of W. Sebaizeh, at an elevation of about 5000 feet above the sea level, I had 15° of frost, and the water in my gerba was in the morning a solid mass of ice.

I was surprised even in the neighbourhood of J. Eth Thebt to find the ruins of monastic establishments and gardens. The monks of old must have known every spring in the country, and I scarcely found one that had not a garden and house near it. The ascent of the mountain was somewhat difficult and dangerous, owing to the loose *débris* of its porphyritic rocks and numerous precipices. I was four hours in reaching the summit, but was rewarded by a good view of the southern portion of the Peninsula, which does not consist of a long straight ridge of mountains as usually represented in maps, but is almost as grand in its confusion and irregularity as the more northern portion. J. Eth Thebt forms a centre, from which several important wadies run to the gulf on either side. On leaving it I traced eastward to its junction with W. Kyd, the great trunk wady, called in its upper portion Esméd, lower down W. Gerât. I returned northwards by W. Kyd, famous for its palm-groves and stream of running water. At the head of this wady stands J. Mazroud, one of the most conspicuous mountains in the Peninsula. This I also ascended, and found on its summit traces of

an ancient excavation, but for what purpose it had been made I could not discover.

Hearing that ancient workings existed at a spot called Senned, I next directed my steps there. I found, much to my surprise, that it lay only about 8 miles to the north-east of J. Mûsa. In Palmer's map it is placed upwards of 30 miles distant. I followed down to W. Es Sheikh, almost to the Sheikh's tomb, and then striking eastward, came quite unexpectedly upon a large plain, after about an hour's walk. This was the plain of Senned. It is so hidden by the mountains which enclose it that its existence has, I believe, up to this time been unknown to travellers. I myself had been living at the convent upwards of a month, and had ascended most of the highest mountains round, without ever having discovered it. It cannot be less than 6 or 7 miles long, and is nearly 4 miles broad. It is bounded on the south by the fine range of Jebel Um Alowee, so called from the central mountain of the range, which rises precipitously from the plain. The plain slopes gently northwards from this range, and presents a smooth expanse of gravel, studded here and there with round-headed knolls of coarse syenite. On the south and west it is quite shut in by mountains; it is more open on the east, and from it on the north flow several broad wadies, which gradually sweep round to the Gulf of Akaba. My Arab pointed out the position of six springs on different sides of this plain, but they are all of them, I believe, with one single exception small. Following the road to Dahab, which skirts the northern side of the plain, after walking nearly 3 miles, my Arab drew my attention to some small blue stones, which evidently contained copper ore; on comparing them with the surrounding rocks, I found that they must have been brought from some other spot. Thinking that they might have been washed down by the rains, I searched higher up the slope, and succeeded in tracing them up to a spot, where, in addition to these blue stones, lay a number of small pieces of iron ore and slag. At first I could discover no other traces of furnaces, but on turning up the sand with my pickaxe, I found in many places, a few inches below the surface, remains of fires, and broken pieces of crucibles. Here then was a smelting-place, probably for both iron and copper; and, no doubt, the ore was brought here for the sake of the excellent fuel afforded by the roots of a low bush called "ajerum," which abounds near that spot. Night coming on I slept under a rock close by, and early the next morning went on to examine the ancient workings that my Arab had described to me. Following down a wady called Hushthobbak for a few miles, we came to a projecting mass of

rock in the centre of the valley, which contained traces of both copper and iron ore, for which excavations had evidently been made. We next turned eastward across the mountains, and soon came to the *débris* of ancient workings, which covered the whole mountain side. Ascending to the top we found a view running south-east by north-west, across mountains and wadies, which had been almost continuously worked for the distance of nearly 2 miles. We struck upon it at the north-west end, and followed it up. In several places the hard granite rock had been cut away to a depth of 30 feet or more, the *débris* consisting often of massive blocks, having been rolled down the mountain side. I could find no traces of chisel marks, no flints, or stone hammers, nothing to show how or when these extensive excavations had been made. The surface of rock in many places was a beautiful turquoise-blue. There appeared here to be no traces of iron, only copper. The vein in which the copper occurs varies from 1 to 6 feet in breadth, and consists of a fine grained syenite lying between the coarser white syenite and a thick vein of porphyry. I afterwards found a very similar vein, also apparently containing copper, in Wada Baba. And on the coast of the Gulf of Akaba, north of Sherue, I again found traces of smelting furnaces, and similar pieces of slag and ore, probably brought from the neighbouring mountains. I was led to the discovery of this latter smelting-place, by finding at some little distance off flakes of worked flints. Unable to account for finding several near each other in so barren a spot, I followed up the watercourse in which they lay, and it led me to the top of a low hill, where I found the traces of furnaces.

On November 28th I removed to J. Serbal, and pitched my tent in the upper part of W. Er Rym, near the ruins of a village, which appeared to me to be of the monastic period, but to have been built partly upon the ruins of the older *round* buildings. I had intended to have stayed here several days, for the purpose of exploring the mountain; but the water of the well, on which I depended for my supply, was so putrid, owing to the decaying leaves which fell from a wild fig-tree overhanging it, that I was unable to do so. I spent, however, two nights there, and succeeded in visiting the two ruined monastic establishments of W. Sigyllye, and also in ascending the southern peak of J. Serbal. The ruins of Sigyllye, which I believe no other travellers have visited, I described in my former paper, and I then mentioned the very remarkable roads, which are found around the whole mountain, but especially in this neighbourhood. Their authorship had puzzled me; but, on further examination, I came to the conclusion that they do not date further back than the monastic period.

On moving from W. Er Rym, I sent my camel on by W. Feiran to the bottom of W. Aleyat, while I myself made an excursion round the west of J. Serbal, and then rejoined it. For some days a storm appeared to have been gathering, and on the 3rd of December the clouds looked so threatening and the wind was so high that I did not venture far from my tent, which was pitched on the east side of W. Feiran, nearly opposite the mouth of W. Aleyat, which flows down from the central peaks of Serbal. At half-past four a few heavy drops of rain began to fall, but not sufficient to disperse the knot of Arabs who were sitting round my fire. At five, however, a tremendous thunder-storm burst upon us, the Arabs quickly dispersed to their tents, and I had to gather all my goods together and take them and my two Arabs under the cover of my little tent. I never saw such rain, and the roar of the thunder echoing from peak to peak and the howling of the wind was quite deafening. It soon grew dark, but the lightning was so incessant that we could see everything around us. In a quarter of an hour every ravine and gully in the mountains was pouring down a foaming stream, and as my tent was not pitched on very high ground, we kept an anxious look out for the flood, which we saw must ensue. The roaring of a torrent down a narrow gorge behind us showed that the waters were quickly gathering. Soon a white line of foam appeared down the wady before us, and quickly grew in size till it formed a mighty stream. Its course lay on the further side of the valley, and I was tempted to cross over to some high ground in the middle to watch its progress, for enveloped in a waterproof sheet I had left the tent to witness the effects of the storm. Fortunately I did not do so, for in a few minutes the stream rose so rapidly that I must have been cut off by it had I ventured to cross over. I went back to my tent and packed up all my things ready for a hasty retreat, if necessary, and then returned to watch the torrent. It was still rising steadily, but soon so sudden an increase took place that I had barely time to rush back to the tent, and with the Arabs help carry my things to a wall, about 15 yards distant, before the water was upon us. When I took the last load the water was nearly ankle deep. I ran to the wall and back, and it was nearly up to my knees; with a desperate effort I seized the tent and dragged it to the wall, but narrowly escaped being washed away in doing so. We were congratulating ourselves on having saved everything, when down came another sudden rush of water, and we had barely time to carry the things to higher ground; we saved all, however, except my boots, which were washed away. It was now only a few minutes past six. It had left off raining, the flood began to subside, and, with the help of a little dry straw from the middle of the camel's saddle,

we managed to light a fire. We had just got a good blaze, and were sitting round it drying ourselves, when suddenly a tremendous wave leaped over the wall of the garden in which we had placed ourselves and carried away our fire, a second wave demolished the wall, and our things were in greater danger than ever; but again we succeeded in saving everything, and this time carried them high up the mountain side. Our poor camel, which was tied to a tree, struggled and roared piteously as he felt the water rising; but we released him before he was in any real danger. After seeing everything safe, I went to a commanding position to watch the flood. The lightning had ceased, but the moon began to shine out brightly. It was a grand but awful sight. It seemed almost impossible to believe that scarcely more than an hour's rain could turn a dry desert wady, upwards of 300 yards broad, into a foaming torrent from 8 to 10 feet deep. Yet there it was, roaring and tearing down, bearing with it tangled masses of tamarisks, hundreds of beautiful palm-trees, scores of sheep and goats, camels and donkeys, and still worse, men, women, and children. A few miles above the spot where I stood a whole encampment was swept away. I saw some of them swept past me in the pale moonlight: nearly thirty people were known to have perished, but two bodies only were found; the rest were buried in the *débris*, or carried down to the sea. The roar of the torrent as it swept past me was tremendous; the boulders ground along beneath the water with the noise as of a hundred mills at work, and every now and then the very ground on which I stood shook again, as some huge rock charged down against it from W. Aleyat. When I returned to my tent at half-past nine the waters were rapidly subsiding, and it was evident that the flood had spent its force. In the morning a gently flowing stream, but a few yards broad and a few inches deep, was all that remained of the flood. But the whole bed of the wady was changed; where yesterday a bank had stood covered with trees was now a deep muddy watercourse. In other spots huge banks of sand and stones had taken the place of hollows. The scene recalled forcibly to my mind the remembrance of a visit to Sheffield after the terrible disaster caused there a few years ago by the bursting of a reservoir. The Arabs were astir at an early hour, inquiring for missing friends and searching for lost property. None remembered such a storm before, and all had some tale to tell of hair-breadth escapes, or loss of property. Nearly a thousand palm-trees had been swept away in W. Feiran: this in itself was a terrible loss to the poor Arabs, who depend so much on dates for food. But I was much struck by the quiet way in which the men heard of their losses. Not a murmur was uttered; "All comes from God," was the one

expression in the mouth of all. One poor fellow, whom I knew well, hurried back from a distance when he saw the storm gathering, to find his wife, six children, his tent, and all his worldly possessions swept away; yet he, too, seemed to find comfort in this thought. A casual observer would have said that they were lacking in affection; but living amongst them as I then was, I saw that this was not the case: whatever other Bedouins may do, the Tówarah Arabs love their wives and children dearly. The *women*, however, unlike the men, are noisily demonstrative in their grief. I had accepted an invitation from one of the sheikhs, and was staying at his tents two days after the flood, when the news of the loss of some relations was first made known to the women of the encampment. Dreading the scene that would follow the announcement, the men appeared up to that time to have withheld the news. The first woman who heard it uttered a loud shriek and rushed out of her tent: the cry was immediately taken up by all the women, and clapping their hands, tearing their hair, and crying aloud, they all rushed out into the desert, running some one way, some another, pursued by the men who led them back, now coaxing, now threatening, now dragging them along by main force; but no sooner were they brought back than out they rushed again, until having apparently satisfied themselves that they had done their part, they dropped back by degrees to their tents, though some of the nearest relations went to visit the scene of the disaster. It will be many years before W. Feiran recovers from the effects of this flood, for many miles every herb in the bed of the wady was swept away, the wells were filled up, the gardens destroyed, and where a few days before I had passed through a thick wood of tamarisks, nearly two miles in length, I now found a barren waste of sand, without a vestige of a tree.

On my return to the convent I prepared for another excursion to the south of the Peninsula. I first traced down the great trunk wady Nusb from its source near Um Shaumer to its mouth near Dahab, fixing the position and name of every branch wady which joined it. After visiting Dahab, where I found no traces of buildings, except a few round tombs, I turned inland again, and striking southwards by J. Um Shôke and J. Terrâny, I followed down W. Melhadje to its junction with W. Kyd, and so on to the sea. I next visited Sheren and Ras Mohammed, and returned by the seaport of Tor, following an inland road between the two latter places, which appears to be almost unknown; but unfortunately I was suffering at this time from want of food and water, and had to push on too fast to be able to explore this part of the country as fully as I wished.

I afterwards spent some time in the sandstone district exploring

the mines of Serabit-el-Kadim, Nusb, and Mughâra. The mines of Serabit-el-Kadim are very extensive, far more so than I had anticipated, extending over an area of some miles. With the exception of a few workings for kohl, not previously noticed I believe, they are all turquoise mines. In wady Nusb there are mines apparently for turquoise, hæmatite iron, kohl, and lead, and the remains of a large smelting-ground. The slag from the furnaces forms a low mound, about 200 yards long and 100 yards broad. This slag apparently consists principally of iron, but slight indications of copper are found with it. The kohl mines in this district and in W. Baba to the north-west are very extensive, and many more mines of this kind exist, I believe, in other parts of the sandstone district. The mines of W. Mughâra are entirely turquoise mines: some of them are still worked by the Arabs. Both at Serâbit-el-Kadim and W. Mughâra numerous flint-instruments are found, and occasionally the same hammers that were used by the miners. The Egyptian tablets prove, I believe, that some of these mines were worked before the time of the Exodus. There are a good many Sinaitic inscriptions in W. Nusb; but I found none in any way connected with the mines.

My last excursion was, in a Biblical point of view, the most interesting of all. I first visited Ain Huthera, which has been identified as Hazeroth, the third station of the Israelites after leaving Mount Sinai. It lies a few miles north of the road to Akaba, and is seldom actually visited by travellers. Its situation is such as, in my opinion, to preclude all idea of its having been one of the stations of the Israelites, for it lies in a complete cul-de-sac, near the head of a deep ravine confined by high precipitous cliffs, and can be approached only from the west by a steep narrow path utterly unsuitable for the passage of an Israelite host. I followed down this wady to its junction with W. El Ain, not far from the Gulf of Akaba, and I then turned up this latter wady. This, too, has been laid down by many as the route of the Israelites, but its complicated windings and narrowness appear to me utterly to overthrow such an opinion.

Following Wady el Ain almost up to its head, I crossed a low pass of sandstone to the upper springs of El Ain, a charming basin at the bottom of W. Telleger, containing abundance of water and thick beds of bulrushes and reeds, the latter frequently upwards of 20 feet in height. The sandstone at the pass was remarkable, consisting in great measure of a conglomeration of white nodules varying from the size of a pea to that of a large cannon-ball; in one spot the sandstone was of a dark red colour, the colouring matter being curiously

confined to the exterior of the rocks. I observed numerous ruins of round buildings in the neighbourhood of these wells. Still bearing westwards, I followed the course of W. Telleger, a broad valley about 35 miles long, inclosed by the white sandstone and limestone ranges of J. Thellal on the north, and J. Huthera on the south. At the head of this wady were extensive sand-drifts, but their monotony was relieved by the hundreds of white and purple crocusses that grew upon them. Here for a few miles I wound in and out between low sandstone-hills, and at length reached an extensive sandstone plateau, affording an unusually large amount of pasturage, with splendid views of the southern granite mountains and J. Serbal. I had intended to make my way direct to J. Odjmeh, but on questioning an Arab whom I met as to the road he had followed, he mentioned having slept the night before at a place called el Huther; since Ain Huthera was evidently not Hazeroth, this I thought might possibly turn out to be it, and accordingly I directed my steps towards it. My direction lay across the plateau upon which I had entered on leaving W. Telleger. Porphyry by degrees took the place of the sandstone, but the plateau still retained its fertile character. This fertility is chiefly caused by the rain lodging in the hollows of the rocks, and thus giving life to the thin stratum of sand which has drifted over them. This plateau, which is 12 or 15 miles in length and 7 or 8 in breadth, goes by the name of Leranûk. On the western edge, near the head of a wady bearing its name, is situated El Huther. Here lie some old gardens with seven wells, besides several water-holes. On a hill overhanging these gardens, I found the ruins of ancient buildings, consisting of round houses very similar to those which I have before mentioned, and higher up on the plateau numerous groups of similar ruins are seen. Might not these be the "inclosures" of the Amalekites which gave the spot the name of Hazeroth? From El Huther I went on to J. Odjmeh, descending to the lower plain which has wrongly been called "Debbet er Ramleh," and passing up W. Sik to the basin of Um Râyther, which may perhaps be identified with "Rithmah." J. Odjmeh has lately been brought forward as a probable Mount Sinai. The authors of this theory have, however, utterly mistaken its position and character: which in no way answer to the Sinai of the Bible. The name J. Odjmeh is not given to any one mountain, but to a long limestone range which lies above the range of J. Tih, and supports the plateau to the north, which is drained by the Wady El Arish.

The Tih range, which sweeps across the whole breadth of the peninsula, is not entirely a limestone range as usually described; two-thirds of its height is composed of a white sandstone, upon

which lies a thick stratum of sandstone. This at least is the character of the most southerly portion of the range, which supports a broken plateau a few miles broad, drained by wadies running down to the south. The real plateau of the Tih, the drainage of which runs to the Mediterranean, lies to the north of the Odjmeh range.

After leaving J. Odjmeh I retraced my steps to El Huther by a slightly different road, and then struck southwards following the direct road to W. Es Sheikh. This led me first across the lower portion of the Zerenēek plateau, and then along a succession of wadies so broad and level as almost to deserve the name of plains, until I reached the narrow gorge of the Mokad Mûsa. From the head of W. Hibran on the west there stretches north-eastwards across the peninsula a long unbroken wall of granite, at first upwards of 1500 feet in height, but gradually lowering as the higher ground in the centre of the peninsula is reached.

Along the whole of this length two roads only are found which lead southwards—one up the Nukb Hawy, the other by W. Es Sheikh. If Jebel Mûsa be the true Mount Sinai, the children of Israel must have taken the *latter* road, the former being so difficult a pass as to be out of the question. And at this point, about 10 miles from Mount Sinai, would be the natural place to fix Rephidim. At this very spot the Arabs point out to you the “Mokad Nebi Mûsa,” *i.e.* “the Seat of the Prophet Moses.” This tradition is apparently of *Arab*, and not *monastic*, origin; and it is rendered more striking perhaps by the inability of the Arabs to explain why the seat of Moses should be remembered; they apparently know nothing of the battle of Rephidim.

The Bible tells us but little about Rephidim, but that little tends fully to bear out the truth of this Arab tradition.

In the first place, the Amalekites appear to have chosen some spot where they collected their forces, and awaited the approach of the Israelites, and it was evidently so selected as to leave their enemies without water, while they were well supplied.

At the gorge of the Mokad Mûsa the W. Es Sheikh cuts through the wall of granite forming a tolerably level passage about 400 yards long, and from 50 to 80 yards broad; on either side, east and west, the range continues impassable. North and south of this pass are plains of considerable extent, forming admirable camping-ground for the two armies.

The southern plain, which would be that occupied by the Amalekites, having several copious springs close at hand; the

northern plain, where the Israelites would be forced to encamp, being totally destitute of water.

The Amalekites, like their Arab successors, would probably throw a barricade of rocks across the pass, and station themselves behind it. When this was forced, the battle would extend to the upper portion of the pass, and also to the plain above. The rock pointed out by the Arabs as the Seat of Moses is merely a fallen detached rock of no great size, but immediately above it stands a low rocky peak, which, while completely out of arrow-shot from the surrounding heights, commands in a striking manner a view of the pass beneath and the plains on either side. This probably was the hill on which Moses took his stand attended by Aaron and Hur, and from its northern base may have flowed the waters which miraculously supplied the children of Israel.

No spot could possibly be selected more suitable for the circumstances related of the battle; as the Israelites marched onwards the outstanding encampments of the Amalekites would naturally fall back to their mountain fastnesses. To oppose so numerous a host they would establish themselves in the strongest possible position, which a glance at the country shows at once to be the pass of Mokad Mûsa. By manning this pass they could hold their enemies in check, and prevent them by the narrowness of the gorge from bringing their full forces into action, and they would also be able to send down from the Nukb Hawy pass small bodies of men to harass their rear, and "smite the hindmost of them when they were faint and weary," and distressed through want of water.

On my return to Suez, I paid another visit to J. Serbal, again crossing over by the head of W. Erkym, and passing round the western side of the mountain until I reached the central peak, which I ascended by the usual path, though not without some little difficulty, as the rocks were covered with a sheet of ice caused by the melting of the snow which had fallen a few days before (on Feb. 2nd), and still lay deeply in the crevasses.

In my former paper I mentioned finding a number of inscriptions near the summit, including some apparently *painted* under an overhanging rock with white paint. I again examined the latter, and confirmed my opinion as to the paint. This perhaps tends to connect them with the ruins of a building on a rocky platform close at hand, in which paint may have been used. One can hardly suppose that it would be carried to the summit of the mountain for the mere purpose of painting inscriptions when the usual plan was to engrave them upon the rocks.

From J. Serbal I journeyed to W. Mokatteb, and up W. Mugeraffe to Serabit-el-Kadim, which I visited in a steady down-pour of rain, which lasted for five hours. Those who know the dry barren nature of this district will scarcely be able to realise its aspect under such circumstances; with pools of water standing on the flat hill-tops, and the roar of cascades ringing in one's ears on every side. From Serabit-el-Kadim I struck north to the large broken plain which lies at the foot of Jebel Tih. The late rains had caused numerous flowers and herbs to spring up, and there was abundance of water standing in the basins formed by the depressions in the sandstone rocks. A large number of Arabs were encamped there with their flocks for the sake of the pasturage.

Skirting the edge of the Debbet-er-Ramleh, the belt of sand which lies between W. Nusb and J. Sarbont-el-Gemel, I descended W. Hommar to the head of W. Taiyebah, and again crossing the plateau at the head of W. Usseit I reached Wady Ghuründel, and taking thence the upper road by Ain Howara, along the sea plain, I arrived at Suez on the 11th of February, having been wandering in the desert exactly four months.

The account that I have given of the country has necessarily been brief and incomplete. It is difficult to describe accurately a very mountainous country of a desert character without rendering one's description tedious by a string of uninteresting names of mountains and wadies. I have preferred, therefore, to leave my map to explain the nature of the drainage of the country, and the position of the principal mountains. The heights of the mountains which I ascended will be given hereafter.

The country is of course chiefly interesting to us on account of its connexion with the history of the Exodus. I will therefore sum up briefly the opinion which I have formed from my own observations respecting the much-disputed route of the children of Israel.

After crossing the Red Sea somewhere in the neighbourhood of Suez, I think that they took the lower road down the plain along the coast as far as Ain Szouweira, which may possibly mark the locality of Marah. They then turned inland to Elim, which I would place at Ain Howara. Their next encampment was by *the sea*, possibly near the mouth of W. Ghuründel, which the abundance of water would render a fitting spot for an encampment before a severe forced march across the barren plateau of Usseit. The Wilderness of Sin I would identify with the plain of Es Seyh, which lies beneath the Tih range. It is rather a succession of large basins than one plain, and after rain its fertility is great, and its water-supply abundant.

If the Israelites took this northern route I do not think that

they could possibly have descended to the *plain on the coast* south of J. Hummâm, down the narrow winding wady Taiyebeh, afterwards to reascend it to W. Hommar. The barren and waterless character of the desert plains of Merkha, which have generally been identified with the Plain of Sin, and the narrow, winding, confined character of W. Feiran, which affords the only road thence to Jebel Mûsa, lead me to abandon the idea of this having been their route. Dophkah I would place in the neighbourhood of W. Keneh, near Lib-el-cheir. Alush, at W. El Ash, a broad wady uniting with W. Berah not far from W. Es Sheikh, up which latter wady I would then lead the Israelites to the Rephidim, which I have described, and so on to Jebel Mûsa, Mount Sinai.

The character of the mountains of J. Serbal and J. Odjmeh forbids, in my opinion, any likelihood of their being Mount Sinai. In the neighbourhood of the former there is *no plain*, in the latter range there is *no one distinct mountain*. One mountain only, it appears to me, can enter into competition with J. Mûsa, viz., the hitherto unknown mountain of J. Um Alowee, "the Mother of Heights," a name which might possibly be a corruption of J. Elohêm, "the Mount of God." The name of the plain "Senned," which lies beneath this mountain, is not very far removed from Sinai, but the final *d* seems to forbid the connecting together of these names. The copper-mines opposite were probably Egyptian; if so, the mountain and plain would have been well known by name to King Pharaoh.

The tradition connected with the name Jebel Mûsa, and especially the better supply of water, are in favour of that mountain. But the plain of Senned affords a better camping ground, containing about *thirty* square miles, whereas the plain of Er Rahar, at the foot of Jebel Mûsa, with its lateral wadies, contains at the most barely *six* square miles. There is little, I think, to choose between the peak of Ras Sufsâfeh and J. Um Alowee. Both rise almost precipitously from the plains beneath them, and are of nearly equal height; at the foot of both bounds might easily be placed to prevent man or beast approaching them.

If, however, I have discovered a new rival to Jebel Mûsa, it has at least this advantage over others, viz., that the road to the two is identically the same up to the last five or six miles, and so, whichever mountain the preference may be given to, our observations with regard to the route of the Israelites to Mount Sinai are equally valid.

With regard to their route *from* Mount Sinai to the Tih plateau, the shortest and most open road leads almost due north across a succession of broad wadies or plains to El Huther,

which may probably be identified with Hazeroth, and thence by passes either on the east or west of J. Thellal to the basin of Um Rayther, which perhaps represents Rithmeh. From this point there are several roads north over the ridge of J. Odjimeh to the elevated plateau which slopes northwards to the Mediterranean.

I cannot conclude my paper without a protest against the theory that the Sinaitic inscriptions are the work of the children of Israel. I have carefully examined the locality and character of those inscriptions, and copied some hundreds of them, and I have found not *one single point* in favour of such a theory, and many facts in contradiction of it. The strongest of them all being the existence of a *bilingual inscription*, viz., *Greek and Sinaitic*, which is undoubtedly the work of *one hand*. Strangely enough this inscription happens to be the very one in which Mr. Forster discovered the names of Rephidim, Moses, Aaron, and Hur.

Who the authors of the inscriptions were still remains a matter of doubt. But I discovered by chance, during my late travels, one interesting point connected with them, viz., that they were almost all *engraved with stones*. I happened one day to find some pointed stones left on a ledge beneath some drawings of animals that had been made during the last few years, closely resembling the more ancient ones. That was in the *sandstone* district; but I afterwards tried experiments in various parts of the peninsula, and found that with the rocks which I picked up I could with ease make inscriptions either on the sandstone, limestone, or granite rocks, which most closely resembled the true Sinaitic inscriptions.

It is not to the Sinaitic inscriptions, but to the natural features of the country, the rocks themselves, and the mountains and wadies, that we must look for further knowledge to confirm and illustrate the Bible History. The country still remains but little known. None of it has as yet been carefully surveyed; but my own observations enable me to state with confidence my belief that further research will tend to confirm the truth of the sacred records, and to cut away the ground on which infidelity bases its arguments. I do believe, in fact, that an accurate survey of the peninsula of Sinai will tend to establish the route taken by the Israelites with such a degree of probability as almost to amount to certainty.
